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The Detection of Tuberculous Cows from the Post-mortem Examinations of Calves and Pigs, in Abattoirs.

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A great deal of most useful information as to the distribution of disease throughout the country can be obtained from *post-mortem* evidence in the slaughter of animals for human food. This information is, however, pre-eminent in connection with tuberculosis for several reasons:—

1. In many cases the disease is unsuspected until the animal is opened in the slaughterhouse.
2. Tubercle of young calves is rarely detected during life, but is not uncommonly seen during the inspection of carcases of veal for human food.
3. Tracing the source of infection in calves and pigs found tuberculous in the abattoir, in a large number of cases should lead to the detection of a cow or cows suffering from tuberculosis, as defined by the Tuberculosis Order, on the farm where the diseased animals were fed or reared.
4. Tuberculosis being a disease scheduled by the Ministry of Agriculture, certain types of it can be dealt with under the Tuberculosis Order.
5. If tubercle is suspected to exist in any bovine animal, on any premises, the local authority is compelled under Article 4, Paragraph 1, of the Tuberculosis Order to cause a veterinary enquiry to be made to ascertain whether the disease exists.
6. Local authorities have an excellent opportunity to co-operate, with very beneficial results, in dealing with tuberculosis, where the slaughterhouse and the farm from which the tuberculous animal was sent are in the districts of different local authorities.
7. It is a disease communicable to man.

PRESENT METHODS OF DETECTING BOVINE ANIMALS AFFECTED WITH TUBERCULOSIS AS DEFINED BY THE TUBERCULOSIS ORDER OF 1925.

These vary very widely in different local authorities. While some carry out a routine inspection of all dairy cattle in their districts, under the Milk and Dairies Order of 1926, others await reports from the farmers of suspected cows on their premises. In other cases a certain number are detected through samples of milk being taken under the Milk and Dairies (Consolidation) Act of 1915, and the examination of milch cows under the Special Designations Order of 1923. The lack of uniformity in the methods of different local authorities in dealing with the problem causes considerable annoyance to milk producers, because in one area they may be kept under close supervision while in an adjoining one the cows are rarely, if ever, examined.

The procedure under the Milk and Dairies (Consolidation) Act of 1915 is laborious and tardy, and notifying the farmer of the veterinary officer's visit to examine his milking herd, gives the unscrupulous person an excellent opportunity of getting rid of any cow or cows he suspects of suffering from tuberculosis, or being undesirable to retain in the herd. "To be forewarned is to be forearmed," with the result that special preparations are made for the veterinary officer's visit, so that he rarely sees the cattle and cowsheds in their normal condition. Whereas, under the Tuberculosis Order of 1925, if a bovine animal is suspected of suffering from tuberculosis as defined by the Order, on any premises, the veterinary officer appointed by the local authority for the purposes of the Diseases of Animals Acts, has power to enter the premises and examine all the animals therein without giving any notice to the owner or occupier. Such powers may be resented by many agriculturalists, but if utilised they would unquestionably result in many more cows being detected and dealt with under the Order, for which object it was presumably designed.

Under the Milk and Dairies (Consolidation) Act of 1915 a local authority can please themselves whether they take samples of milk for biological examination or not, and the number taken is left entirely to the discretion of the local authority.

A number of tuberculous cattle are detected by veterinary inspection in markets, but generally speaking the system of market inspection is unsatisfactory, and could be improved with very beneficial results. The further elaboration of this question is too large for this short article.

The practice, in districts where there is no routine veterinary inspection, of leaving the notification of a bovine animal suffering from tuberculosis, as defined by the Tuberculosis Order of 1925, to the owner, is extremely unsatisfactory and uneconomical. So far as tuberculous cattle and their notification are concerned, it would appear that although many stockowners are able to see, they have not the faculty for looking, with the result that badly infected animals are kept in the herd until they cease to be an economic proposition. They are only fit for the knackery, but as forty-five shillings, or one-fourth of the market value, can at least be obtained for them under the Order, they are consequently notified to the local authority. This system of notification of the existence of suspected disease being left to the owner, where no routine veterinary inspection is carried out, is so obviously an unsound policy, and is so well recognised as such in the profession, that I need not labour the point.

To sum up, the present methods of administering the various enactments dealing with tuberculosis in cattle are very unsatisfactory and extravagant, and although a number of dangerous animals are slaughtered under the Tuberculosis Order of 1925, I cannot see that it will lead to any material diminution in the incidence of the disease in cattle.

THE UTILISATION OF SLAUGHTERHOUSE INFORMATION AS AN AID IN ATTACKING TUBERCULOSIS.

As a means of detecting cases of tuberculosis, particularly when the udder is affected, the evidence obtained in the

slaughterhouse from the *post-mortem* examination of calves should be of premier importance, and deserves attention. No figures, so far as the writer knows, have been published to show to what extent this information is used, which is a matter for regret, because statistics published on these lines would be most illuminating.

The percentage of calves affected with tuberculosis the author has found to be about .09 per cent., and every affected calf is very strong, if not conclusive, evidence that there must have been, or is, a cow or cows affected with tuberculosis as defined by the Order on the farm where it was reared and fed. If an effort was made to trace the infection in the calf, provided it was carried out by a capable veterinary surgeon, the results would be extremely satisfactory and beneficial.

As the majority of calves are slaughtered at about a fortnight to three weeks' old, and many unfortunately a good deal younger, much less time would be lost in visiting the farm than in waiting for the result of the biological test. The method is also economical because no expense is incurred in obtaining the information, and all local authorities have the officers available for the necessary administrative and executive action. The entire procedure could be carried out under the Diseases of Animals Acts, which is quicker and much more direct than under the Milk and Dairies Acts and Orders. Where such information was obtained, local authorities concerned could be informed, to avoid duplicating the work and overlapping. For instance, where a local authority receives information that a tuberculous calf has been found in a slaughterhouse from a particular farm, and the herd is to be examined, the taking of a sample of mixed milk for biological examination from that herd is unnecessary.

One must not forget that by dealing with tuberculosis in cattle and particularly affecting the udder, one is reducing very considerably the incidence of tuberculosis in pigs, because, with the exception of a small proportion of mild cases due to the avian tubercle bacillus, nearly all cases of tuberculosis in the pig are of bovine origin.

Dystokia in Bitches.*

By Arthur H. Bryan, Baltimore, Md.

It is noticeable that veterinary literature fails to give definite instructions for a method to be used in forceps cases in dystokia occurring in the bitch. At least 75 per cent. of all the canine dystokias occur in the following breeds: Boston Bull terriers, English Bulls, and the toy breeds, particularly Pomeranians.

The veterinarian is usually not called upon to handle dystokia cases until at least twenty-four hours of labour pains have failed to produce any or all of the pups. This is evidence that ordinary ecbolic treatment, that is, ergot, hydrastis, quinin, or pituitary extract, or even pituitrin itself, is liable to fail, and surgical procedure will have to be resorted to if parturition is to be effected. Merely to insert oil into the vagina and os, then inject hypodermically pituitrin or ergot, and then leave the case, is bad, for if it fails the chances for successful forceps delivery or cæsarean section as operative procedures are lessened.

First an intra-uterine examination should be made with a well-oiled finger to determine whether or not the forceps or wire snare can be used to advantage. If the pup's head can be felt, or even if it cannot, when the labour pains are weak through long futile attempts, then the first attempt should be made with a five per cent. solution of pituitrin. If ergot is used, great care should be exercised unless the case is due to uterine inertia, for if a small or contracted cervix, or any obstruction, is the cause of the dystokia, then ergot in any form is contra-indicated, due to the strong contractions induced (Glass). Half an ampule for small or toy dogs, and a full ampule for the larger breeds is a safe dose of pituitrin. It should be noted that the action of pituitrin is quite transient, but effective in ordinary cases.

To use the forceps or wire snare is a difficult procedure while the powerful intra-uterine contractions are being induced by the pituitrin, though it may be tried. The fœtus slips back and forth through the cervical canal at each labour pain, and makes the snaring of the head even in a normal presentation, with the wire-loop snare, or the intra-uterine forceps, an almost impossible task. You think you have the fœtus snared, and it slips out, as the contraction of the uterus ceases. Either that, or you have only a portion of the lower jaw in the grasp of the forceps, which tears away on your exerting traction. In other words, it is difficult to attempt a forceps or snare delivery while the fœtus is being squeezed back and forth, and there is the further danger of tearing the vaginal or uterine wall. My method is to give the ecbolic effects of the pituitrin a fifteen- to twenty-minute chance to effect parturition. If it fails, then continue the use of pituitrin. Even larger doses will probably prove just as ineffective.

My method, after this fifteen-minute action of pituitrin, is to quiet the uterus, and stop-labour pains temporarily, and put the bitch at ease with a one-eighth or one-quarter grain of morphine, administered hypodermically, or 5 to 10 grains of the bromides might be tried orally, the dosage in both cases depending upon the size of the bitch. This is an undoubtedly humane treatment, as the violent, painful, though useless contractions cease entirely. Physiologically, either the bromides or the morphine will cause a general depression and relaxation of the nervous system and to some extent the musculature also. The fœtus is now quiet, and pressure on the abdomen, squeezing toward the pelvis, will help bring the head into the cervical canal.

Next inject a little good oil into the vagina and cervix as a lubricant and a protective to the membranes. Then, using a well-oiled finger, make rotary movements around the os, helping to dilate and further relax the cervix if that is possible. Here the finger will probably come in contact with the head of the pup. If it does not, then try further squeezing and abdominal massage, working towards the pelvis all the time. Usually, however, the previous use of the pituitrin has effected at least this much for the operator. With the head in contact with the finger, the wireloop snare can be inserted, and again make rotary movements with the finger, around the head, and under the head in particular, which has a tendency to lift the head up into the cervical canal.

Next endeavour to manipulate the loop around the head, and then over it, until it slips around the neck. Very steady

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and gentle traction, easing the head through the cervix and vagina, will most likely effect the delivery, particularly if the operator tends to lift up the head with the finger of the hand not employed in the traction. When the head is presented, rest a moment or two. Then with the finger ease the shoulder and fore legs into position, that is, if the finger can be inserted past the neck, still tending to lift upward. Once the head is presented, of course, you can pull the fœtus right out easily, but the above may prevent a torn membrane. Following this, easy traction completes the task.

Should the attempts to snare the fœtus prove futile after a few attempts, then the forceps must be resorted to. If the operator has heavy fingers the snare method is hardly worth trying at all. Dr. John W. Adams, late professor of surgery and obstetrics at the Veterinary School, University of Pennsylvania, used to prescribe a long-armed veterinarian for cattle obstetrics, and a long and light-fingered gentleman for canine cases. If the forceps are to be resorted to, ordinary curved sponge forceps are not bad for canine work, though in observing the human obstetrician at work on forceps cases, one cannot help but be impressed with the value of the intra-uterine forceps; a safe delivery is reasonably assured without injury to the mother or baby. Canine delivery forceps developed along lines similar to the human forceps prove a boon to the veterinary practitioner.

The fœtus is apt to be quite large, too large for the head to pass through the cervix, easily constituting the etiological factor in the dystokia. The large fœtus, being heavy, has a tendency to sink in the first loop of the uterus below the entrance to the cervical canal. Obviously, the operator's task is to lift the head up to the level of the vaginal opening. Therefore, whatever or however the forceps are used to effect the delivery, the tendency to lift the head all the time should be stressed. Frequently the forceps are unnecessary—just lift the head up with the first finger under the jaw, in between the two rami of the mandibles, the first digit of the finger being flexed and used like a hook.

If the head is too large to pass through the cervix and vagina, embryotomy must be resorted to. Then turn the forceps round and, guiding them with the finger of the other hand, bring the jaws of the forceps so that their upper jaw rests over the frontal and parietal bones, while the lower prong of the forceps rests under the jaw of the fœtus. Then crush down on the head of the fœtus. If the hold on the head of the fœtus is still good, after crushing it, delivery may be effected without relaxing the grip at all, though great care must be used in applying the steady, upward, gentle traction, as the head may be pulled off altogether.

The next job confronting the surgeon is to overcome the effects of the morphine by either letting the effects wear off, from five to seven hours, or resorting to a stimulant, and then starting up the labour pains again with pituitary extract or ergot. (The drugs may be left with the owner to be used orally.) Quite often the remaining pups will pass out without further interference. If not, then you have a clear case for laparotomy, massaging the gravid uterus directly, trying to squeeze out the remaining pups, or resorting to cæsarean section without any further delay.

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THE ABATTOIR AND DISEASE DETECTION.

Elsewhere in this issue we publish a short article on "The Detection of Tuberculous Cows from the *Post-mortem* Examinations of Calves and Pigs in Abattoirs," from the pen of Capt. H. L. Torrance, whose duties consist largely of meat inspection at Birkenhead. This town is well known to many members of the profession as a landing place for animals from our neighbouring islands, and even, in some cases, from certain of our colonies. The chances for the making of observations on the incidence of disease in such a port are great and should allow many opportunities for research. Fortunately the busy meat inspector rarely spares himself when he thinks that it is his duty to add to our knowledge.

In the present instance Capt. Torrance has placed before us a subject which, in its broadest phase, is not new, for on different occasions there have been references in the columns of the *Veterinary Record* to the value of tracing the origin of the tuberculous infection in pigs' heads. In bringing to our notice the case of the calf recently infected with tuberculosis, the author, however, appears to be breaking new ground. His figures show that only one calf in every 1,100 inspected is likely to be tuberculous, and when it is remembered how many calves are either placed directly on artificial foods or are sold to the butcher before they have a chance to become infected, it will be seen that the abattoir must only be regarded as an occasional and additional means of getting at the tuberculous udder.

Nevertheless, the paper suggests to our minds other important factors. Undoubtedly, the author infers that what can be done in the case of tuberculosis can also be applied to all the other infective and parasitic diseases of our food animals. As an example, one can imagine the good that might accrue by tracing back to their breeding places all animals affected with echinococcosis, and then rounding up the infected carnivores. In this way the disease in man and animals could be stamped out.

More important still is his plea that tuberculosis control is unsatisfactory It is beginning to be recognised by county authorities that routine inspection is necessary if they are honestly to shoulder their responsibility to the rate-paying farmer, the butcher,

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and the consuming public in far-off towns. Several counties now have staffs actively engaged in disease detection, and to these the findings of the meat inspector can be of great help.

The only satisfactory answer to these problems, from a business-like and economic point of view, is an efficient State Veterinary Service, models of which are now to be found in several countries. At the present moment one ministry deals with scheduled contagious disease of animals and another treats of milk and meat. There are veterinary schools and research institutes receiving grants, and advisory veterinary officers scattered over the country. There is the veterinary department of the Ministry of Agriculture, with its headquarters, research, superintending, divisional, food, and other officers. Finally, many boroughs and an increasing number of counties have veterinary officers engaged on various duties,—some are responsible for studs of municipal horses, others for meat inspection ; some for cattle inspection ; and others for the control of contagious animal disease. In some instances other services are performed, such as the duties under the Food and Drugs Acts.

It appears, therefore, that means and opportunities are gradually accumulating, so that in time there may be set up a modern State Veterinary Service. When this happens it will be possible to use such factors as have been mentioned by Capt. Torrance to the benefit of public health, the stockowner, and the general veterinary practitioner.

CLINICAL AND CASE REPORTS.

How often do Freemartins Breed?

By HENRY TAYLOR, F.R.C.V.S., Hayward's Heath.

For a good many years now, whenever I have come across twin calves, one a male and the other a female, I have inquired of the owner if he would keep the female for stock purposes, and his reply has invariably been, "They say they will not breed." The bulls are generally not worth considering as far as keeping them is concerned.

I have only collected six cases upon which to report. One heifer, a Jersey, never came in œstrum, at least she was never noticed to be; a second one, also a Jersey, although she came in season and was stocked several times, never proved in calf. Two Shorthorns gave birth to calves and two, I believe, did not come in œstrum. One made a bellowing noise, rather like a bull.

Some Clinical "Notes and Comments."

By HERBERT BUCKINGHAM, M.R.C.V.S., Norwich.

Following upon the highly-appreciated visit paid by Major Hamilton Kirk to the Lincolnshire and District Division, when he dealt with "Some Canine and Feline Problems," I entered into some correspondence with him in which certain cases were detailed and comments made which we both feel may be of some interest to your readers. I also send notes on one or two matters other than those dealt with in the correspondence, for which perhaps space may be found.

THE HOUSE CAT'S FLEAS. In my rather long life I have never been *minus* a house cat, and the present ornament of my hearth (a neuter male) is the most lovable, sensible and trainable of the species. Unfortunately, and in some unascertainable way, he periodically becomes infested with fleas.

I simply smother him with pulv. iodoform ℥ii, mag. carb. levis ℥i, well mixed, and rub it well into his skin once. No more fleas for six months.

CONCERNING CANKER. I once had a very persistent case in a Spaniel's ears. It was under my treatment for years, and only seemed to get worse. A surgeon who helped me with my research work in tumors, was at my house. I showed him the case and suggested an operation for mastoiditis, which I thought might be the trouble. He agreed to do it in a few days' time, advising me, in the meantime, to use a direct application of absolute alcohol. I grieve to say that the surgeon dropped dead in a few days, and I lost a real friend—he had helped me in several operations: amongst others, that of screwing a plate on a broken lower jaw, and also of passing the bronchoscope in a case (reported in the *Veterinary Journal*) of obstructed œsophagus. This was in 1926, and under the *interim* treatment he had advised, the subject of this note recovered. I sent a six-ounce bottle of spts. vini meth., to be used twice a day at first. The owner has had several bottles since, and only recently wrote telling me that the dog was all right, but that he wished to keep some by him. I use the spts. vini meth., finding that it acts just as well as absolute alcohol. If the mucous membrane inside the ear gets harsh, I put a little boracic ointment in, say, once a week. I do not like hydrogen peroxide at all; in my opinion it irritates the mucous membrane.

I am afraid I have never been able to discriminate otorrhœa (canker) from any other disease of the internal ear.

I have just received a request to look at a pony's ear. He is over thirty years' old, and his internal ear is "growing up"; he is a pensioner (so the owner tells me). I was in a big country practice for twenty-five years, after receiving my diploma (1885) and even to this day I do not remember seeing a case of *internal disease* in the ear of the horse. Until recently, I always used iodoform powder as a remedy for "canker," and with great success. Its disadvantage is that some clients object to its aroma.

Re TICKS. A "dead certainty" in dealing with these parasites is to dress the dog all over twice a week for three weeks with Cyllin solution (as Jeyes' Creolin used to be named), prepared as follows:—Put four pints of cold, soft water into a Winchester quart, swirl it round well and, whilst it is in motion, add gradually two ounces of Cyllin.

"CAN A DOG HAVE DISTEMPER TWICE?" I say, emphatically—yes. I have been in practice nearly forty-five years, and I have seen two dogs suffer from distemper twice during their lives. One was a Collie bitch. She had distemper when she was nine months' old and again when she was nine years' old. I treated her during both attacks. In between those ages she had numerous litters of puppies.

The second attack was followed by total paralysis of both hind legs. I can picture her now as I saw her then, dragging both those limbs along the grass. I treated her, and with the help of two ladies who nursed her night and day, and performed massage on her, she recovered. She subsequently bred three litters of pups, and died at the age of fifteen years.

Birth Marks. I may state that I am a firm believer in birth marks. Twice in my life I have been laughed at for possessing that belief. In the year 1884 I was attending a private tuition class held by the late Professor Penberthy, and the subject was raised. I stated my views and gave an illustration, but apparently I was the only one in the room who admitted that such lesions were possible. I was "squashed" again in recent years—two doctors, each of high qualifications, literally laughed at the idea. The following facts account for my conviction. In 1884 I went with an assistant to see a cow, at Frenze Hall, with a skin wound along the region over the ribs on one side. The wound was caused by the cow being stuck fast in a gate-way, the gate having a protruding "hank" on it. The cow was over half time in gestation.

A few months later I was present and helped to extract the calf. When the calf was born there was a distinct mark on its skin over its ribs on the side corresponding to that upon which the cow was wounded. I am not sure that, at that age, I would have noticed it had not the same assistant pointed the fact out to me.

I also know of an authentic case in the human being—one who is at the present day alive. If seen by a scientific person the case would prove that "birth marks" are facts.

Diseased Meat.

Irish Imports to Glasgow.

Several weeks ago a report was made by the veterinary inspector at Glasgow to the Corporation with reference to consignments of diseased meat coming to the city from Ireland. Arising out of this report, a conference of the larger burgh authorities in Scotland has been called.

The veterinary inspector in his report stated, regarding large consigments of carcases (quarters and sides) of old cows slaughtered in Ireland and shipped to the Glasgow market, that a considerable proportion had been found tuberculous and seized for destruction. Some time later Bailie Park and Councillors William Smith and Strain discussed the report with Mr. P. J. L. Kelland, the Assistant Chief Veterinary Inspector of the Ministry of Agriculture and Fisheries.

Mr. Kelland stated that the Ministry would not entertain the suggestion of the Corporation Diseases of Animals Committee that the cows should either be imported alive into this country, or, if slaughtered in Ireland, their carcases should be consigned to an Irish animals landing place for veterinary inspection prior to being permitted to be removed therefrom for exposure for sale in a meat market or elsewhere. He also said that to amend the Act and Orders in that connection, so as to give effect to the said suggestion of the committee, would be a retrograde step which his Ministry could not contemplate in so far as it would mean the reversion to the deplorable conditions under which old cows were shipped from Ireland to this country. In Mr. Kelland's view the unsatisfactory state of affairs set forth in Mr. Trotter's report did not fall to be dealt with by his Ministry, but was a matter which came within the purview of the Scottish Department of Health.

(*Continued at foot of next column*).

TRANSLATION.

New Remedies.*

By V. Robin,
Professor of Medicine, Veterinary College, Alfort, Paris.

At the beginning of this lecture, it appears to me necessary to defend myself against a possible criticism. Well-endowed or at least well-meaning minds have probably wondered if the innumerable remedies put at our disposal in recent years deserve, in fact, to form the subject of a conference.

The truth is that among us, as among doctors, there are two mentalities: beside some of our colleagues, most frequently among the youngest, who are literally dazzled by every novelty (as if the value of a remedy were conditioned by the newness of its appearance) there are others, generally older, who have known the vicissitudes of drugs, reputed marvellous for a season, then lost for ever in general oblivion. The latter tend to believe there is nothing new under the sun; they know that there is no better purgative than sodium sulphate, that the hypnotic virtues of opium have never been disputed, that in his time Solleysel said that sulphur is the friend of the lungs; they keep endlessly embroidering the old theme of Frank: "When I was young I had a hundred remedies for one disease, now I am old I have only one remedy for a hundred diseases."

One must be just to our time; one may have a profound sense of tradition, and have an equal sense of evolution. In truth, the science of therapeutics has, since the middle of the 19th century, experienced a profound renovation; the progress made in physiopathology has led the clinician to direct his efforts not against symptoms but against functional disturbances of organs. Microbic pathogenesis has made possible the search for the specific cure of infectious diseases and has found it for some; finally, synthetic Pharmacodynamics has given us a multitude of products, some really new but most of them variations, often successful, on ancient motifs.

Obviously, before the incessant flood of new drugs which scientific works—and clever publicity—bring to us every morning, we have the right to be reserved. . . . . I cannot do better than to quote here that reflection of Pascal: "If so many impostors claiming to have cures are credited, the true cause is that genuine cures exist."

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(*Continued from previous column.*)

Recently Bailie Park reported that, at a meeting of the Health Sub-Committee on Inspection of Meat and Fish and Milk Supply, the veterinary inspector reported that further consignments of the carcases had been received at the Glasgow Market and that the sub-committee were in correspondence regarding the matter with the Scottish Board of Health and the local members of Parliament.

The committee, after discussion, and in view of the action being taken by the Sub-Committee on Inspection of Meat and Fish and Milk Supply, agreed that the matter be left in their hands.— *Glasgow Herald.*

* Ex *Recueil de Médecine Vétérinaire.*

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A first observation should be made: the science of therapeutics, which in the past discovered so many remedies in the juices of plants, now looks for few discoveries in that direction.

Veterinary clinicians have not yet interested themselves in ouabain extracted from strophanthus, which doctors consider superior to digitalis in the treatment of certain cardiac deficiencies.

It is not possible for me to dwell on some recent applications of belladonna in the treatment of emphysema in the horse, nor on the new indications of its alkaloid, atropine, which Roger has restored to a place of honour in the treatment of certain forms of colic in which the gastro-intestinal spasm has to be combatted.

. . . . . .

The great discoveries made in the last 20 years in endocrinology, which have given a prodigious impetus to organotherapeutic treatment, have not incited veterinarians to use organic extracts, at least intensively.

I may indicate, however (with all the reserve imposed by the small number of observations made on the subject): that the addition of adrenalin to anti-rachitic preparations with a basis of calcium salts, increases their efficiency; that extracts of liver, as well as the diastase of my colleague Maignan, sometimes bring about a cure in obstinate eczema; that thyroid extracts, used with caution, will fairly frequently dissolve fatty deposits in obesity in the dog.

But we owe a special mention to the extract of the pituitary body. The difficulties of intervention in dystokia of the bitch are generally known. It is unnecessary to insist on the terrible dangers of cæsarean section. Attempts at traction and embryotomy operations are, as a rule, made blindly, and the operator, in almost every case, makes grave lesions in the genital organs. Now, very often, dystokia is due, in spite of appearances, not to defective position or excess of size, but solely to insufficiency of uterine contractions. In this case, hypophysin is remarkably efficacious. A dose corresponding to 0.40 gr. of dry extract of the posterior lobe injected subcutaneously brings about rapid expulsion of the delayed fœtus. This product, doubtless, is not completely harmless; in human medicine it has caused disappointments. But, in the circumstances of exceptional urgency in which we are called to use it, and in proportion to the inadequacy of other means, the risk of accidents cannot be an obstacle to its employment.

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The filiation of researches which have in the last six years led L. Blum and his pupils to bring to our notice the diuretic action of calcium chloride, is singularly interesting.

As a result of clinical discoveries, the details of which I spare you, the Strasburg professor arrives at the conclusion that in œdemata, more particularly in renal œdemata, it is retention of the ion Na., not that of the ion Cl., that causes hydratation of the tissues. In other words, the expression hydrochloride retention, unanimously used, is inexact; we should speak of sodium retention. Experiments show him that in most of these œdemata a remarkable improvement is obtained by administering potassium chloride. According to Blum, salty water deposited in the tissular spaces is incited to move towards the renal emunctory because the introduction of the ion K displaces in the humours the ion Na. Whatever be the value of this hypothesis, is it not interesting to compare such data with our ancient knowledge of the diuretic virtues of potassium acetate and especially potassium nitrate, that salt of nitre dear to veterinarians of the preceding generation? But potassium salts are difficult to use: general accidents, vascular disturbances, which occur in patients already weakened, constitute an almost absolute obstacle to their employment.

Blum is thus led to substitute for them calcium salts, the lactate and above all the chloride of calcium. He, and numerous observers after him, find that the administration of large doses of this salt (15 to 22 gr. a day in man), combined with a diet poor in sodium chloride causes a resorption, frequently rapid, not only of œdemata following on nephritis, but also of œdemata of unknown origin, called essential œdemata, of abdominal effusions seen in cirrhosis of the liver and in peritoneal tuberculosis, also of inflammatory effusions of the pleura.

The doctrines of Blum have been successfully applied to veterinary therapeutics by Lesbouyries, notably for ascites in the dog and anasarca in the horse.

As a rule, ascites in the dog is, we know, of tuberculous origin, but the mechanism of the peritoneal effusion has never been clearly defined, and the various theories borrowed from human medicine are rather frequently at fault. We may suppose that, at the origin of these splanchnic effusions, there is a retention of sodium chloride, probably connected with tissular alterations of microbic or toxic origin.

This hypothesis, which is difficult to prove experimentally, led Lesbouyries to administer large doses of calcium chloride (15 to 20 gr. a day) for ascites of whatever origin, in the dog, in the same way as for pleurisy. The results were generally favourable; and even, in cases not due to tuberculosis, a definite cure of the ascites was obtained without preliminary paracentesis.

It is, however, to be expected that this treatment will not always have such favourable results: ascites being only a syndrome, treatment with calcium constitutes merely a pathogenic cure the effects of which may be only temporary; in any case, tuberculous ascites and pleurisy, which constitute the immense majority of the cases observed, do not appear bound to benefit (you know the reason) by this therapeutic innovation.

Calcium chloride has been recommended for anasarca in the horse. The guiding idea is the same. According to my colleague, the petechiæ manifest the irritant action of the ion Na on the capillary endothelia; as for the œdemata, they are due to the saturation of the organism with microbic poisons which, to become diluted, attract water laden with sodium chloride. This is, applied to a special case of our medicine, the fine theory of Achard on the defensive, antitoxic rôle of the œdema. Practice shows us that the theory is just: calcium chloride administered to a horse suffering from anasarca, either per os, or intravenously in isotonic solution of 20-25 in 1,000, the dose of calcium chloride in either case being 30 grams at least, produces in a few hours abundant diuresis, and, after five to six days, the œdemata begin to diminish.

Here too, the treatment being purely pathogenic or symptomatic, it would be advantageous to combine it with anti-streptococcus serum therapy, which has already given so many good results.

Calcium chloride is not only a diuretic: at present it plays a rôle of the first importance in the treatment of spontaneous hæmorrhages, or more exactly, hæmorrhagic syndromes.

Without wishing to inflict on you a discussion of the theories of coagulation of the blood, which are singularly obstruse, and are, moreover, continually being modified, I will remind you that calcium salts are necessary to this coagulation, and allow the transformation of the inactive prothrombin into a fibrin formant. Hence the idea of utilising them in pathological conditions manifested by a tendency to spontaneous hæmorrhage of the mucous membranes, the parenchymata, the skin, etc.

Pezet obtained good results from it in the treatment of that curious disease of Southern France which he called essential purpura, by giving large intestinal lavages every two hours with a solution of 8 to 10 in 1,000; Raymond Mossu recommended its use for typhus in the dog. Let us not delude ourselves—purpura hæmorrhagica has a complex origin; it has not been proved that it is connected with a deficiency of calcium in the blood, and it is certain that certain alterations of the sanguineous plaques, the part of which in coagulation is undeniable, as well as lesions of the vascular endothelia, enter into consideration. Accordingly, calcium chloride as a remedy for hæmorrhagic conditions can only be an adjuvant; its hæmostatic action must, in general, be supported by that of gelatine solutions or serum therapy.

Under these conditions, the treatment deserves to be tried for hæmophilia, so frequent in pregnant females, for essential hæmaturia in bovines, for epistaxis in race-horses, and for those still enigmatic purpuric conditions which have been observed for some time past in young bovines in Brittany.

Beside its diuretic action, its hæmostatic properties, its anti-anaphylactic virtues, over which I pass, calcium chloride is also efficacious against diarrhœa, and, as such, it is used in man either by ingestion, or particularly in intravenous injections. In the dog, it has also a real constipating action, but I do not believe there is any general advantage in substituting it for the many efficacious drugs already at our disposal.

Finally, and to show how far people will go when a remedy is fashionable, an author of German speech, Ritzenhaler, considered that it was possible to neutralise with this alkaline earth salt, the acid waste products of the muscles which are at present considered to play the principal part in the pathogenesis of hæmoglobinuria in the horse. Control experiments, made at my instigation by my pupil Paradis, have shown that the heroic treatment of hæmoglobinuria remains to be found.

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Next comes a substance discovered 35 years ago which has attained great popularity since the war.

Hexamethylene-tetramine,* the synthesis of which was realised for the first time by two Frenchmen, Bardet and Trillat, was commercialised by the Germans under the name "urotropine."

It was first considered a good urinary antiseptic, because it decomposes in the kidney, or even the stomach, liberating formol. Medical men also considered it, because of a chemical process (which nobody, it seems, remembered to state precisely), a solvent of uric acid, and beside piperazin and lithium it enters into the composition of drugs which extraordinary publicity spread throughout the world. As it is eliminated by the bile, on which it confers incontestable antiseptic properties, it was used in the treatment of infectious jaundice.

But in a short time its field of action was enormously extended, and it was made the principal agent in the struggle against a number of infectious diseases. Either alone, or associated with other substances such as iodine, it was used for typhoid fever, eruptive diseases, hæmorrhagic septicæmia, puerperal infection, etc.

In veterinary medicine, the career of urotropine, at least as a general anti-infectious agent, does not seem to have been particularly brilliant up to the present. I use it, for my part, freely enough, in the first stage of distemper: the results appear favourable, but I know that at this stage a well-regulated diet and hygiene are often sufficient to check the pathological evolution.

A more recent application of the drug merits consideration. We know that American veterinary surgeons have for some time used intravenous injections of formol in the treatment of anasarca: 2 to 4 grams of formol diluted in 30 grams of warm, boiled water are injected: the dose is renewed on the second and sometimes on the third day. Now Eloire has successfully replaced formol by urotropine administered in doses of 30 grams in 100 grams of boiled water, and has, it appears, obtained almost sensational results.

That is not all. It has long been known that the neural axis is comparatively isolated from the rest of the body by an arrangement the anatomical substratum of which is not well known, and which, for want of a better term, is called the hæmatoencephalic barrier. Experiments have sought to determine, among therapeutic substances, those which succeed in crossing this barrier and in passing from the general blood circulation into the central nervous system; it was soon perceived that urotropine enjoyed the happy property of passing easily through this filter opposed by nature to most chemical substances. Taking as their basis these facts, which were already applied by Anglo-Saxon physicians in the treatment of encephalitis lethargica, Paniset and Verge have recommended the use of urotropine in acute and subacute myelitis, which complicate distemper so frequently and so gravely. In practice, it has shown numerous failures, and interesting results cannot, in my opinion, be expected from it unless in combination with the classical treatment which we have not so far been able to replace or even to improve.

More recently, R. Moussu conceived the idea of using urotropine for infectious encephalitis, which he studied in the horse, ox and sheep. For the last species the results were *nil*. For the horse and the ox, in which recoveries reached 78 to 90 per cent., Moussu recommends daily administration of urotropine, either per os or in intravenous injections in a solution of 10 to 100.

* (Hexamine, B.P.)

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Observations which followed appear, notably in the Northern departments, to have been unanimous in verifying the efficacy of urotropine in encephalitis of the ox. For the horse, it was somewhat different; in France few practitioners have, after Moussu, observed the curious encephalitis which he described. In Germany the first experiments undertaken by Ostertag in the treatment of a disease, if not identical with, at least closely related clinically to, Borna disease, were so favourable that in certain provinces, especially in Wurtemburg and Saxony, the use of urotropine became obligatory, under pain, for the owners, of losing their rights to indemnity if the animals died. Strange to say, as soon as the treatment became official and obligatory, it was much less efficacious, and experiments carried out in 1925 over three months gave 92 per cent. of failures.

In fine, in spite of the hopes it aroused, urotropine does not seem likely to realise the specific chemotherapy of infectious encephalitis and encephalo-myelitis in animals.

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Since the early ages of humanity, arsenic was used at once by poisoners and therapeutists, and it is not perhaps merely a coincidence. Nevertheless, its place in human medicine was, until recently, comparatively modest; it was used little more than as a general reconstituent in certain forms of anæmia, and to modify nutrition in emphysema. In spite of the observation made by Ricord of their antisyphilitic virtues, the mineral arsenical compounds were used only with great caution, justified by their dangerous toxicity; even 20 years ago, the Pharmacopœia included little more than arsenious acid, arsenical water (*i.e.*, Clater's), arseniate of soda (Pearson's solution) and potassium arsenite, the basis of Fowler's solution.

It is to the fine conceptions of Armand Gautier on the cacodylates and to the genius of the learned chemist Ehrlich that we owe the extraordinary efflorescence of organic arsenical compounds which has considerably enriched the therapeutics of our time. It is impossible for me—and I regret it somewhat—to describe to you in this conference the theories which led Erhlich to establish the foundations of arsenical chemotherapy of parasitic diseases, and how, starting from atoxyl, launched in commerce in 1902 by the Germans (it had been discovered 40 years previously in France by Bechamp under the name "arsenanilide"), and grafting to this arsenical trunk more or less complicated branches, researchers arrived at the whole series of arsenobenzols.

About the chief of these, salvarsan and especially neosalvarsan, our opinion can now be established, from the numerous experiments in which they were tested.

We shall speak here exclusively of the latter—914 or neosalvarsan—which possesses over 606, its predecessor, the immense advantage of being soluble immediately in a small quantity of distilled water, without preliminary addition of soda.

The new arsenobenzol is not only used for the different forms of syphilis; doctors have employed it for many diseases due to spirilla, spirochætes or other protozoa; and some affections of undetermined nature have also benefited by it, notably pulmonary gangrene. pernicious anæmia, some forms of dermatosis, and even grippe (influenza).

Veterinarians, always so eager to exploit the progress of therapeutics, did not delay in testing these new bodies. Moreover, it was on the suggestion of Ehrlich himself that, in 1911, Rips used salvarsan for Brustseuche or contagious pleuropneumonia, and observed that if the drug is given intravenously in the early stages, the disease stops short, the temperature falls to normal, and the animal becomes convalescent. Official experiments undertaken in the German army, then in the studs of Gudwallen and Trakehnen, confirmed the favourable results obtained by Rips. The discovery of neosalvarsan rendered the treatment more convenient to apply and, during the war, the Germans behind the front generalised its use for all animals suffering from contagious pneumonia in the first stage.

Observations made in France before the war by Haan, and since by Hebray, Martin and Pecherot, and many veterinarians who did not consider they should publish the result of their observations, are unanimous in confirming the efficacy of neosalvarsan in the treatment of this disease.

Further, a number of veterinarians (Bridre, Trouette and Negre in the Pasteur Institute in Algiers, Descazeaux, Darroux, Douville) have found that this arsenical composite has, in cryptococcal lymphangitis, a remarkable curative action, especially if its use is combined with surgical treatment. Douville saw that a weekly injection of a strong dose of neosalvarsan (5 to 6 gr.) brings about, in 8 to 10 weeks, a cure in 85 to 90 per cent. of animals treated, and failures appear due to the fact that in lymphangitis of long-standing various bacteria unite with the cryptococci.

Likewise, some experiments made in Tonkin by Bergeon, in Morocco by Velu, and more recently by Professor Ciuca in Bucharest, lead to the important conclusion that trypanosomiasis of the horse, and notably dourine, yield to arsenobenzol when given in strong doses.

Finally, I will remind you that neosalvarsan lotion (1 in 40) possesses, according to Descazeaux, manifest curative properties in summer wounds, usually so obstinate: the parasitic granulations disappear in about ten days, and the lesion evolves then regularly towards cure, like a simple wound.

It is curious to note that neosalvarsan, the indications of which are so many and diverse in the medicine of the horse, is much less interesting in bovine pathology. Let us point out, without insisting too much, for the fact needs confirmation, that, in doses of 5 to 6 grams, it is said to be efficacious against gangrenous coryza ((malignant catarrh), and farcy of the ox, and I take the liberty of pointing out to you, without wishing to attribute great importance to my observations, which in fact were not numerous, that a few years ago I obtained splendid recoveries with it in infectious broncho-pneumonia of bovines, which other drugs had failed to check.

Nor do canine therapeutics appear to benefit much by the use of arsenobenzols. Distemper is hardly influenced by them. However, Milchamps obtained cures of paralysis with sulpharsenol, and Bouchet has highly recommended sodium stovarsol for the first stage.

On the other hand, diseases of the poultry yard will doubtless derive considerable advantages from these new bodies. Let us mention that arsenobenzol is remarkably

efficacious in spirochætosis or pseudo-syphilis of the rabbit and also in certain diseases of poultry, notably spirillosis in geese.

Many veterinarians still hesitate to use neosalvarsan because it was long considered a dangerous product. But improvements made in its manufacture and in the technique of its application are such that, at present, nothing in this direction is to be feared. The dose to be used is 1.5 cgr. per kilogram of body weight for the horse and ox, 4 to 6 centigrams per kilogram for the rabbit. In practice, for the larger animals, 3 to 4 grams are given in one injection, and this dose may be greatly exceeded. The product is sold in sealed ampoules, free from air, in which it appears as a yellow, very fine powder, with a slight garlic odour. It is important, above all, to verify carefully the integrity of the ampoules, and to reject any that are cracked. The solution is made in distilled water, at the time of use, in the proportion of 20 cubic centimetres of water to 3 grams of powder. It will also be wise to reject solutions which are not a good clear yellow, but which are muddy, thick or brownish ; in such cases the arsenobenzol has undergone changes.

The injection should be given intravenously. This is an essential precaution ; failing it, you run the risk of causing œdematous swellings, or even more or less extensive escharotic lesions around the site of injection. The startling accidents observed by military veterinarians during early experiments, and compared by them to the nitritoid crisis in man (falling, profuse perspiration, expulsive efforts of great violence, dyspnœa, cyanosis of the mucous membranes, general pseudo-tetanic contractions) are no longer observed with the products now manufactured.

The horse is much less sensitive than man to arsenobenzol and the other species are even less sensitive than the horse. Occasionally a little agitation is observed, as if the animal had slight colic, some trembling, one or two defæcations, rather intense dyspnœa, and the crisis is over in a few minutes.

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I have now to speak to you of a family of drugs of synthetic origin, the central element, the keystone, of which is not a long-obscure metalloid, but something still more humble and modest, since it is the most, or nearly the most, elementary residue of our organic transformations, the ultimate product of the dislocation of protein matter— urea.

Chemists conceived the idea of combining with the molecule of urea various organic chains, and they obtained the series of the barbiturics, which constitute a fine collection of depressive agents of the nervous system.

Ethylphenylbarbituric acid, or gardenal, considered by physicians as the best anti-epileptic at the moment, deserves to be widely used in canine medicine. I attribute to it a great superiority over bromides, even over the classical triple-bromide association, not only because of its efficacy in epileptic conditions, but for the absence of general torpor, psychic depression, following on its use. Although I have never observed an accident in the dog, I believe it wise, remembering what takes place in man, in whom toxic disturbances have sometimes been reported, not to exceed doses of 0.05 to 0.15 gr.

Somnifene is a very closely-related body, but more complex, and the formula for it has moreover been modified several times. Suffice it to say that here we have not a barbituric acid, but a barbiturate of diethylamine. Discovered recently, somnifene aroused great hopes and students, quick to enthusiasm, counted on it to remove the divine malediction cast upon woman at the threshold of the earthly Paradise. Alas, it seems that if somnifene suppresses the pains of childbirth, it is because of such disadvantages, such dangers, that gynæcologists hesitate to employ it. Likewise, its use in surgical anæsthesia does not appear likely to spread. In brief, somnifene is a hypnotic, which attaches itself solidly to the nerve cell, and is only eliminated after a very long period. Animals treated with it sleep for several hours and present often, before complete awakening, a rather troublesome period of agitation and pseudo-delirium. But the fact remains, none the less, that when administered not intravenously, but by the mouth (20 to 40 minims according to size) or in an enema ($\frac{1}{2}$ to 3 cmc.), it is a sedative of the first order, only slightly toxic. It may be utilised as an antidote to strychnine, as a sedative in infectious encephalitis, perhaps also in epilepsy, and even to render dogs of difficult character more tractable, as sulphonal has long been used to master troublesome horses.

There are other derivatives of urea that have very different properties. We pass Bayer 205, the efficacy of which, we are told, is sovereign in nagana of the ox, and we arrive at allylsulpho-urea, or thiosinamine. This substance, introduced into therapeutics by the German dermatologist Hebra, 35 years ago, was known particularly for its resolving action on cicatricial tissues and perhaps we have, for this purpose, too much disdained it. But it is above all for broken wind in the horse that thiosinamine has enjoyed immense vogue. Its popularisation in France is above all due to the publications of Simonnet and Medynski. These authors assert that "the use of thiosinamine in broken-winded horses not fit for use produces an improvement in the general condition such that it becomes possible to use these horses normally. Such an improvement, although its duration does not seem necessarily to extend over more than six months, not only renders the horse fit for work but increases its value for slaughter."

We must note at once that in the eyes of our distinguished Parisian colleagues, the drug does not appear to act on lesions of pulmonary emphysema, and we do not, in fact, see very clearly how these lesions, which consist essentially in the disappearance of the elastic fibres of the alveolar walls, could be repaired by an agent which is more or less fibrolytic ; and authors are led to believe that the improvement observed is obtained by an elective paralysing action on the diaphragm or on its motor nerves, to which they attribute the essential rôle in producing the characteristic breathing. In truth, observations, now fairly numerous, which I have been able to make as to the curative value of thiosinamine, oblige me not to share the optimism of my colleagues. In spite of all my good will, I have never been able to see the least improvement, much less a cure. I conclude that the good results which are reported to me from time to time are pure coincidence. Broken wind is only a syndrome associated with very diverse pathological conditions which are not all well known. If, in the vast majority of cases, it is due to the emphysema, we know perfectly that some irregularities of the flank appear

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temporarily in horses subjected to an irrational, too bulky, diet. We know also that the attacks of broken wind which are just what renders the horse unfit for use, are attenuated and disappear spontaneously with rest over a varying period. That is doubtless the cause of those marvellous cures which, for my part, I have never had an opportunity of observing.

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The laboratories, having laboured to combine, to associate together, organic and mineral elements, in order to put at our disposal bodies of a terrifying complexity, began to pursue their operations in a quite different direction. They took simple bodies, most frequently metals, and by chemical reactions or by the action of the electric arc, arrived at breaking them up, disintegrating them, pulverising them into a shower of extremely fine granules, visible only under the ultra-microscope, and in size about the millionth of a millimetre. The metal thus dispersed into a state of extreme division in the liquid which keeps it in suspension, this colloidal metal, acquires therapeutic properties which its salts do not possess in any degree, perhaps because, under this new form, the drug has a structure similar to that of the humours into which we attempt to incorporate it.

The innumerable studies made on this subject tend to show that colloidal metals when introduced into a diseased organism, by a mechanism which depends no doubt on catalysis, rouse to activity general methods of defence and confer on the organism the powers of struggling and even of immunising itself against infectious elements and their products. The injection of a colloidal metal often produces intense leucolysis which sets free substances capable of quickly playing the part of antitoxins and stimulants; this leucolysis is often followed, moreover, by a more or less considerable proliferation of the polynuclears. Besides, many of these colloidal pseudo-solutions possess *in vitro* a very obvious bactericidal antitoxic power, which should also be exercised in the organism. Finally, and perhaps chiefly, the colloidal metal, when brought into contact with that colloidal complex of which the blood is constituted, provokes phenomena of flocculation and produces the hæmoclasic shock, which frequently generates a cure.

Note carefully that these colloidal metals appear to act by stimulating the general defences of the organism. It will be wise, therefore, to use them only at the beginning of infections, while the patient has still the means to defend himself and to support the strong reactions caused by the treatment. If injected later, they may be harmful; their action will consist in the destruction of leucocytic elements which are already prepared and trained, and in replacing them by young cells, devoid of any specific efficacy.

Let us recognise also that this artificial method of arousing defences does not direct them strictly and exclusively against the infectious cause of the disease: the colloidal metals as anti-infectious agents are indifferent; and, on this account, we must take care not to compare their therapeutic efficacy with that of sero-therapeutic or even vaccino-therapeutic treatments.

Preparations of this nature are extremely numerous: . . . All metals have been requisitioned.

If I except colloidal sulphur, which has, moreover, successfully been used by my Belgian colleagues, Antoine et Liegeois, in the treatment of chronic eczema, all the colloidal preparations have almost the same indications. In veterinary medicine, electrargol was used, notably by Larrieux, in infectious diseases of the horse, especially in influenzal affections, contagious pneumonia, strangles, and, 40 years ago, Mollereau, after the Germans, recommended the use of collargol for anasarca. Similarly, Ginieis applied it to the treatment of all infectious diseases in young colts, and several veterinarians have recommended it for the different forms of distemper.

It would be unnecessary and tedious to enumerate the possible indications and applications already made of this treatment. It appears to me preferable to sum them up in a few general data. For infectious diseases, where no established specific remedy exists, the colloidal metals are the most powerful agents at present known; but we must not forget all that is disappointing in their use. In cases of similar appearance, completely different results are obtained; after an almost miraculous cure, the same product, in the same disease, on a patient placed in the same conditions, will be absolutely without effect. There is, in fact, an individual factor which we understand but ill; on the subject of colloidal metals, we are still at the empiric stage, and, in any case, it is always prudent not to forget the classic adjuvant remedies.

I must add that these agents sometimes require delicate handling. If the dog and bovines never, or almost never, present the striking external manifestations which reveal the colloidoclasic shock, it is different for the horse, whose extreme sensibility to intravenous injections of electrargol is reported by all observers. I do not think that fatal accidents have ever been observed, but, fairly frequently, the manifestations of the shock are sufficiently dramatic to alarm the owner and shake his confidence in so brutal a treatment. It has seemed to me that the introduction under the skin, or even into the vein, of 2 to 3 cubic centimetres of the product, about half an hour before injection, which should be effected very slowly, of the therapeutic dose, considerably attenuated disturbing accidents or even completely prevented their appearance.

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Beside this treatment with colloidal metals, . . . I must place a series of curative methods which act by an analogous mechanism.

Having sought for centuries in the secrets of botany, in the mysteries of the alchemist's retorts, then in the progress of modern chemistry, for means to combat disease, the science of therapeutics uses now the admirable discoveries made recently in physics.

In phototherapy, with the use of ultra-violet rays, we have at our disposal a means, if not economic, at least elegant and efficacious, of overcoming certain forms of dermatosis, like follicular mange, and very probably, deficiency conditions: rickets, athrepsia, as well as some surgical lesions that resist ordinary treatment.

But I wish to discuss a very different subject. Is it necessary to remind you that the blood stream, and even the protoplasm of cellular elements, are nothing else than colloidal pseudo-solutions? If we reason by analogy, we can forsee that this combination of granules, micellae,

and also of electrolytes, is in unstable equilibrium, and that often the slightest influences may determine the agglutination, precipitation, flocculation of the particles in suspension. Fortunately the cellulo-humeral milieu has a certain tendency to react to disturbing causes, to adapt itself to new conditions, to defend itself against that flocculation which, according to Lumiere's expression, constitutes the death of the colloid.

Nevertheless, the limit of stability may be crossed in certain conditions, which vary according to the subject. The rupture of equilibrium, which follows, is manifested by a whole series of phenomena more or less perceptible, designated by the name of colloidoclasic shock, which expresses at once their nature and suddenness. Let me point out to you, in passing, that a whole chapter in this connection has just been constructed in human medicine: many pathological conditions; crises of hæmaglobinuria, certain migraines, asthma, hayfever, toxi-alimentary forms of dermatosis like urticaria, appear to be connected with a special instability of the colloido-plasmatic equilibrium.

But what interests us most here are the resources which the science of therapeutics seeks to draw from these new teachings. The school of Widal, to which modern medicine owes so many fine discoveries, has had the merit of discovering that the curative action obtained by the colloidal metals, of which we have just spoken, was generally subordinate to a reaction which shows typically the phenomena of shock, and it has asked if the process of shock, which can be provoked in relation to the most varied substances, might not be systematically used either as an anti-infectious remedy, or to modify the humoral milieu in certain chronic diseases.

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Efforts have been made particularly to utilise the effects produced in the organism by the introduction of foreign proteins: thus was created protein therapy, which embraces a whole series of rather curious therapeutic measures.

Injections of milk were tried. Galactotherapy has been recommended by German and Swiss veterinarians in the treatment of foot-and-mouth disease, strangles, arthritis in foals, gangrenous coryza (malignant catarrh), distemper, diphtheria in hens. In France, some veterinarians appear to have obtained favourable results from it in ocular affections of the horse, notably in irido-cyclitis, and in eczema of the dog. Evidently, the method is easy to apply, since it suffices to inject under the skin or into the muscle 4 to 10 cubic centimetres of milk sterilised by heating in a bath at 100°, and to repeat the injection two or three days afterwards, as often as appears necessary. The method is also harmless, as is proved by experiments of Panisset and the observations of every clinician. Unhappily, there is little agreement about its efficacy. It is very probable that, in a future more or less remote, the indications of this treatment will be discovered more precisely, and that it will have been definitely abandoned for many diseases, because of the still inexplicable variations of its effects.

Closely allied to galactotherapy, at least so far as regards probable mode of action, is the method which consists in taking from a patient his own blood and reinjecting it under the skin—autohæmotherapy—to which attention was drawn in human medicine by Ravaux, and in veterinary medicine by Panisset and Verge, This acts according to a rather complex mechanism, the different factors of which have not yet been made sufficiently clear. The blood drawn from the vessels, whether mixed or not with an anti-coagulating substance, undergoes in its structure modifications such that, when reintroduced into the organism, it will act as a foreign albumen and provoke colloidal disequilibrium in the fashion of any protein. Perhaps, also, we must take into account the presence in the patient's blood of microbic products and antibodies which would direct the shock and give it a specific elective quality favourable to its curative action.

In the hands of Panisset and Verge, and of Hebrant and Antoine, it has given good results in eczematous dermatosis in the dog; it was used by various veterinarians for influenza fever in the horse, for pneumonia, anasarca, periodic ophthalmia, and even for infectious anæmia, concerning which official experiments made in the Haute-Marne have had great publicity.

But we must not be misled; here, too, observers—even those most indulgent to their own experiments—state that the results obtained are very irregular. Besides cases in which the method manifests strikingly its superiority over other methods employed, there are others in which no advantage is obtained: there are some even, notably in dermatosis, in which the injection of blood is followed by a very manifest aggravation.

Isohæmotherapy is related to the preceding method. Here the blood of the patient is not used, but that of animals of the same species, and the donor is always an animal that has just had the same disease, and, having become convalescent, contains or is supposed to contain in its humours immunising substances. The injection of blood from a convalescent animal belongs, therefore, at the same time, to therapeutics by shock, ordinary blind protein therapy, and immunotherapy.

The intravenous injection, transfusion of blood, appears to give the most rapid and most powerful effects. In the horse and dog, it does not present the disadvantages observed in man which are due to reciprocal actions of agglutination and lysis. It is different for bovines, in which the extremely grave, even fatal, accidents that have been reported make it necessary to use only the subcutaneous or intramuscular route.

The citrated blood of animals recovered from foot-and-mouth disease, used in doses of 1 cubic centimetre per kilogram, diminishes the gravity of the evolution when it is injected at the beginning before the eruptive phase, which obviously is not practicable and has consequently no great interest.

Arthritis in foals is sometimes favourably influenced by subcutaneous injection of blood from the mothers. Distemper benefits also by this treatment. Lichlenstern obtained, he says, surprising results by injecting into paralysed animals strong doses of the blood of older dogs. Another German, Neumann, obtained by the same method a cure of catarrhal forms. My colleague Vechu, of Bucharest, published, a short time ago, the favourable results he obtained in chorea . . . by the injection, repeated every two days, of 60 to 150 cubic centimetres

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of blood by the subcutaneous route, or of 20 to 50 cubic centrimetres of blood by the venous route. Finally, Charton has, more recently, used the blood of convalescents on a large scale, and with remarkable effects, in an epidemic of influenza in the horse.

It is possible that this method, the technique of which is extremely simple, admits of numerous indications in acute infections, but these indications still need careful study. It will be essential also to establish for each disease the necessary doses, the most favourable method of administration and the period in which the infection is most easily killed, also for how long after the end of the disease the blood of donors possesses the most marked curative properties.

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Autopyotherapy, although derived from human medicine, since it was used during the war by Weinberg and Seguin, is an almost specifically veterinary therapeutic method. It consists in inoculation of the patient's pus, after sterilisation and dilution.

We foresee that the mode of action of these pus injections will be at least twofold : on the one hand, the pus contains the microbial species which are to be combatted, and its inoculation effects a kind of rudimentary bacteriotherapy. On the other hand, pus is a complex substance, containing dead leucocytes, which carry antibodies, and albumens that will act here as foreign proteins.

We must note the numerous publications made during the war by Belin and Velu on the treatment of contagious lymphangitis in the horse, those of Franc and Gardas (who use pyovaccine for most traumatic lesions) that of Monbet on strangles, that of Bemelmans, who claims to cure contagious pleuro-pneumonia ; finally, the observation I made with my collaborator Mglej on broncho-pneumonia in young dogs.

If our views on the efficacy of pyotherapy are not yet completely established, we must admit that the simplicity of its application is calculated to attract the veterinarian, who can himself, with a few elementary aseptic precautions, prepare the material to be injected. In the horse, for example, two to four cubic centimetres of pus are taken and mixed immediately with four parts of ether in a carefully stoppered bottle. The bottle is vigorously shaken to make the whole homogeneous ; shaking is repeated several times during the day and, after twenty-four hours, a quantity equal to that of the ether is added of cold boiled water or physiological serum ; the bottle is shaken anew for a minute, and the vaccine is ready. Every day or every second day one to two cubic centimetres are injected subcutaneously.

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Vaccinotherapy, better named bacteriotherapy, consists in the treatment of a disease by inoculating germs of the disease, artificially rendered non-pathogenic.

We cannot easily understand how this therapeutic measure acts. . . . It is to be supposed that the attenuated virus, introduced into a diseased organism, causes the production of new antibodies by stimulating the defensive reactions of parts of the organism not yet infected. The most enlightened partisans of vaccinotherapy are obliged to acknowledge its empiric character, and the curative action which is attributed to it depends perhaps in many cases on the ordinary reaction of protein shock, which any microbic albumen can provoke.

Medical doctors have shown here a very striking eclecticism and even credulity, and commercial enterprises have not failed to supply food for this credulity. Not only for certain diseases of well-known origin has the germ of these diseases been used, but in some circumstances in which the microbic origin was ill-defined, it was thought necessary to apply complex vaccines into the composition of which up to ten and fifteen microbic species entered : a strange renewal of those complicated preparations of past centuries for which the apothecary ground in his mortar with the most minute care an interminable list of bizarre ingredients.

In veterinary medicine, vaccinotherapy has been the subject of some experiments worthy of notice. Ulcerative lymphangitis may be cured, according to Truche, by subcutaneous injections of Preisz-Nocard's bacillus killed by alcohol-ether. Boquet and Negre, by sterilising by prolonged heating an emulsion of cryptococci obtain the best method of treatment for epizootic lymphangitis. Cutaneous suppurations of the dog have likewise been treated by staphylococcal vaccines used as a dressing for the diseased part, injected under the skin or introduced drop by drop into the dermis around the lesions. The method was employed by Mennerat in the treatment of broncho-pneumonia in adult dogs. Stock vaccines have been put at our disposal intended for arthritis in foals, diarrhœa in calves, uterine infections, epizootic abortion . . . the series is almost inexhaustible.

In reality, and in spite of exaggerations, vaccinotherapy may, if its application is wisely limited, give interesting results. In the first place, it must only be used in presence of a specifically determined infection, and the vaccine strictly corresponding must be applied ; otherwise, it is only protein therapy, and to speak of paraspecific action serves only to mask by fashionable terms the lack of precision in the therapeutic measure employed.

Further, bacterial treatment should be adopted early. If the operation is performed at a later stage, when the exhausted organism has neither time nor resources to meet the reaction demanded from it, bacteriotherapy is inoperative and risks killing the patient.

Finally, it will be well not to consider it as a panacea ; it should be reserved for infections of slow progress, and care taken to employ at the same time the dietetic and hygienic precautions which have lost nothing of their importance.

R. L. Higgins.

South African Pioneer's Retirement. "Mr. W. M. Power, who retires under the age limit early this year, is another member of the rapidly diminishing band of veterinary scientists who carried the burden of pioneering work in South Africa," says the January 4th issue of the journal of that name. " On October 1st, 1919, Mr. Power was appointed Senior Veterinary Officer, Natal. He has had a distinguished career in the public service, and will be succeeded by Mr. G. H. Melck, M.R.C.V.S., of the Transvaal. Mr. Power follows Sir Arnold Theiler and Mr. J. D. Borthwick, who retired some time ago.

" Two Transvaalers will now be in charge of the veterinary branch in Natal. The other is Mr. R. A. Alexander, stationed at Maritzburg. He is the son of Mr. F. F. Alexander, M.P.C."

REPORTS.

Eighteenth Report of the Development Commissioners for the year ended 31st March, 1928.

The above report is now available from any of His Majesty's Stationery Offices, price 3s. 6d. net. The report embodies a short account of the work done at the various research institutes and experimental stations, and the grants made to each. It deals also with sums granted to the Ministry of Agriculture and Fisheries for the maintenance of advisory centres, special research grants, fellowships and scholarships, and miscellaneous experimental schemes. The total amounts of grants during the financial year 1927-28 were (*a*) agriculture and rural industries, £338,794 (with a loan of £250); (*b*) fisheries and harbours, £41,056; (*c*) reclamation of land, £3,552; making a gross total of £383,652. Of this amount the sum of £253,270 was paid from the ordinary fund, and the balance from the special fund provided by the Corn Production Acts (Repeal) Act, 1921, which was originally calculated to last up to 31st March, 1927, and which has now been completely expended. The larger part of the funds available has been expended on two schemes introduced in 1911, *viz.*, the Research Institute Scheme, and the Advisory Centre Scheme. Institutes are organised on a national basis, but are not state institutions: they are mostly attached to universities and in any case are self-governing. Grants made are in respect to salaries and general maintenance. The function of institutes in the main relates to (*a*) plant breeding, (*b*) animal nutrition, (*c*) animal disease. In these larger groups of institutes the expenditure amounts to £53,971, £26,604 and £39,150 respectively, and yet on reference to the constitution of the members of the Advisory Committee on Agricultural Science there is no representative of animal disease, as appears evident in the case of other groups of institutes, a matter which, from a business point of view, somewhat indicates a weak link in Committee organisation.

Of research into animal disease, the following is a brief summary of work carried out at the various animal institutes:—

Institute of Animal Pathology, Cambridge University (*Grant* £10,020).—"Contact with farmers has been established through local veterinary surgeons and agricultural organisers, and the possession of a well-equipped motor laboratory enables urgent questions to be enquired into without delay. The external work is to some extent seasonal. Lambing time is a specially busy period for the staff." A form of contagious abortion in ewes due to an organism of the paratyphoid group has been further investigated, and various immunising agents tested. The practical application of protective inoculation in flocks against contagious pustular stomatitis is under consideration, following on experiments which are being carried out to determine the nature of the virus and which has been demonstrated to be of the filterable order. High protein consumption in relation to pulp kidney disease in young lambs and on the variation of the histological structure of the hepatic cells, has been studied. Altogether a large number of experiments have been carried out with a view of discovering a suitable method for the artificial cultivation of certain filterable viruses. Fibre digestibility mechanism in the ruminant is also being investigated.

Research Institute in Animal Pathology, Royal Veterinary College, Camden Town (*Grant* £5,000).—Field trials with two vaccines against "quarter evil" have been carried out, one vaccine being a germ-free culture filtrate, and the other a suspension of the causal organism killed by formalin. Satisfactory results were established. With the former, out of 1,655 cattle treated, 3 subsequently died from suspected quarter evil but only in one was diagnosis confirmed. With the latter, out of 1,578 cattle treated only one death from suspected, but doubtful, quarter evil resulted. A one-injection vaccine against braxy has been the subject of further research. A study of strains of tubercle bacilli from horses, dogs and cats is being concluded: most have been shown to be of bovine origin. Intravenous injections of formalin in a number of advanced cases of Johne's disease have been shown "to be remarkably effectual in checking the diarrhœa, but unfortunately there was no evidence of the disease being cured." A grant of £200 was received during the year from the Royal Agricultural Society for bovine mastitis investigation, which is proceeding.

Scottish Animal Diseases Research Association (*Grant* £3,940, *equal to two-thirds of the actual expenditure of the Association*).—The annual losses from animal disease in Scotland are estimated at £1,000,000. The need for an increase in staff for field enquiry and continuity of work is emphasised. The new institute at Moredun was opened by the Secretary of State for Scotland on November 4th, and the motor field laboratory presented by Mr. Falconer L. Wallace was completed during the year. With the donation of £500 by the same benefactor, and a grant of £250 from the Carnegie United Kingdom Trust, a good library has been established. With regard to research, "it is hoped that one more season's work on lamb dysentery will yield sufficient results to justify the discontinuance of the study of this question, so that the staff engaged may be free for other work." Braxy vaccine for 48,000 hogs was produced during the year, and there is necessity "for further investigation into means of preparing a vaccine capable of conferring greater immunity without incurring the risks involved." Field returns for 1926-27 show a death rate of 1·35 per cent. as against 6·35 per cent. in controls. As regards lamb dysentery investigation, no evidence of ante-natal infection could be found. "It has been proved that lambs become affected with dysentery after birth, and that the causal agent of the disease gains access through the mouth." "Considerable success was achieved in immunising lambs by inoculation with a serum." Progress in "grass sickness" in horses is retarded by the inadequacy of present knowledge, but the work in progress is gradually eliminating various causes which might theoretically operate. "The lack of research work in the past on fundamental principles concerning the physiology of the larger farm animals is being severely felt in this investigation." A comprehensive programme for research concerning bovine contagious abortion covering a period of five years has been drawn up. A start has been made with transmission work on "scrapie," and experiments with Calmette and Guerin's vaccine against tuberculosis are being continued, the value

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of which cannot be estimated for another two or three years.

Research into Foot-and-Mouth Disease (*Grant for* 1927-28, £15,293, *making a total expenditure of approximately* £43,000 *up to end of March*, 1928).—"The main work under review has consisted of further, but unsuccessful, attempts to propagate the virus outside the bodies of living animals; the study of the multiplication, distribution and disappearance of the virus in small animals after inoculation; the disinfection of material contaminated by the virus; the destruction of the virus by heat; the plurality of types of virus (three types have now been discovered); determination of type of virus by the method of complement fixation; and the treatment of foot-and-mouth disease by iodine and prophylactic serum."

Institute of Animal Parasitology (*Grant*, £5,065).—Investigations concern primarily parasites producing disease in animals. Work on lung-worms in stock has been continued, and the history of hookworm in sheep followed. The parasites of dogs and cats in relation to spread of helminthic infection have been made the subject of study.

Imperial Agricultural Research Conference.—In connection with research institutes, it is of especial interest to note that "the Imperial Agricultural Research Conference held in October, 1927, at which the Commission was represented, although largely concerned with overseas questions, dealt also with questions affecting home problems and the research institutes in this country. The recommendation of the Conference most nearly affecting some of the institutes is that relating to the establishment of Imperial bureaux and corresponding centres in connection with institutes. The functions of these organisations are defined in the Conference report as follows:—'To collect, collate and disseminate information of a scientific and technical character; to reply to enquiries on scientific and technical problems from agricultural departments and scientific workers in any part of the Empire; and particularly to facilitate intercourse among groups of workers on closely allied problems.' The Conference recommended the establishment of the following Imperial Bureaux: Soil Science, attached to Rothamsted; Animal Nutrition, attached to the Rowett Institute; and Animal Health in London. Correspondence Centres, on a rather smaller scale than bureaux, were recommended as follows: Animal genetics, attached to the Animal Breeding Research Department, Edinburgh University; agricultural parasitology, attached to the London School of Hygiene and Tropical Medicine; plant genetics, divided between the Plant Breeding Institute, Cambridge, and the Welsh Plant Breeding Station, Aberystwith; and fruit production at East Malling.

"The Commissioners take the view that, provided the 'Bureau' section of an institute does not become a charge on the existing funds of the institute, and sufficient new staff and accommodation are supplied for the purpose, advantages to research workers in this country will be secured by the arrangement."

Animal Breeding.—Questions of inheritance have largely occupied the activities of the Animal Breeding Research Department, Edinburgh University. For instance, examination has been made of the hereditary defects which are scheduled by the Horse Breeding Act of 1918 and particularly in relation to inbreeding of horses possessing specific defects. Investigation as to the best type of bacon pig has been continued, and the question of sheep in relation to environment is being studied. In conjunction with the Royal (Dick) Veterinary College the Voronoff operation is to be submitted to thorough test.

Animal Nutrition.—In the Animal Nutrition Institute, Cambridge University, of perhaps most special interest to the veterinarian is the work conducted in the Physiological Section, with special reference to fertility in horses, growth, meat, and milk. With regard to the last-named it was found that the amount of hay fed bore no relation to milk yield, but the feeding of succulents was undoubtedly beneficial in that respect. At the Rowett Research Institute, Aberdeen University, the subject of mineral content of pastures and its relationship to disease is being reviewed. Under the auspices of the Scottish Milk and Health Association an investigation has been carried out to test the effect on health and growth of feeding extra milk to school children and a 20 per cent. beneficial effect was obtained with either whole or separated milk. "Separated milk was as valuable as whole milk for promoting growth, and it would appear that the value of separated milk has been under-estimated." Among the "other work" conducted at this Institute "the effect of different dietary constituents on the movements of the intestine is being investigated. It has been found that diets with deficiency or excess of certain constituents lead to abnormal intestinal movements and it seems probable that this derangement of the function of the intestine may be an important predisposing cause to disease. Work on the influence of minerals, vitamins, and ultra-violet rays on the composition of the circulating fluids of the body is yielding information of interest in connection with certain diseases originating in faulty diets. The question whether the abnormal composition of the blood due to defective diets is a predisposing factor in certain infectious diseases, rendering the animal more susceptible, is being studied." At the National Institute for Research in Dairying, Reading University, a special study of the vitamins in milk has been carried out. The fat soluble vitamin which is present in milk has been found to contain two entities, *viz.*, Vitamin A, the lack of which causes cessation of growth, and ophthalmia, and Vitamin D, the lack of which causes rickets. In further experiments, on the effect of foodstuffs on milk, it has been shown that kale in the winter ration raises the Vitamin A content, but not D, whereas silage and hay in a winter ration increased the Vitamin D content and produced an anti-rachitic butter. "Experiments suggest that the dairy farmer who makes use of good hay, silage, kale, swedes, etc., and, where specially required, cod liver oil as a potent source of Vitamins A and D, can make the necessary additions to his winter feeding without the employment of specially prepared artificial food as sources of vitamins." In the disposal of the by-products, whey and separated milk, it has been demonstrated that, given in the dry form as well as in the fresh, their food value for pigs is considerable.

ADVISORY AND LOCAL INVESTIGATION SERVICE.

Grants under this heading for 1927-28 amounted to a total of £60,397. In regard to Veterinary Science, the

Adviser with the Agricultural Department of Armstrong College, Newcastle-on-Tyne, has been mainly occupied with sheep diseases, and in association with the Lamb Dysentery Committee of the Ministry, two field experiments were carried out. An experiment in prevention by the use of vaccines was also made. Losses in lambs from helminth infestation, and loss in cattle from Johne's disease, received attention. Advice on summer mastitis in milking stock was given, and addresses to farmers and to college students on matters relating to the health of live stock were frequently made. The veterinary adviser attached to the Agricultural Department of the University College of North Wales, Bangor, has been occupied with measures for controlling liver fluke in sheep and the effects of treatment by drugs in this and other parasitic diseases of sheep. An obscure disease of ewes in lamb is also being investigated.

The Veterinary Adviser attached to the University College of South Wales, Cardiff, has carried out a large number of vaccinations against braxy with very satisfactory results. He has tested various vaccines for the prevention of fowl typhoid, which is very prevalent, and he is engaged on a peculiar localised disease in horses known as "mountain sickness." Recently an adviser in veterinary subjects has been added to the Department of Veterinary Pathology, Liverpool University.

Special Research Grants were granted to the University College, Bangor, for the investigation of liver rot in sheep; to Liverpool University for the causes of deaths amongst ewes at lambing time, and to the National Institute for Research in Dairying, Reading University, for calcium chloride or calcium lactate as remedies for milk fever.

Research Scholarships and Travelling Fellowships. A Research Scholarship of £200 in Veterinary Science was awarded to Mr. A. C. Fraser, M.R.C.V.S. (Liverpool) for a course at the Animal Pathology Institute, Cambridge, and a Travelling Fellowship was given to Mr. A. D. McEwen of the Institute of Animal Pathology, Royal Veterinary College, Camden Town, to visit the United States.

J. M.

Civil Veterinary Department, United Provinces, India, 1927-28.

In our last notice of a report of the activities of this Department (vol. v., page 1168), we concluded a recital of facts regarding work done and that perforce left undone, with the comment: "These plainly show that the establishment provided is totally inadequate to meet such a situation. . . . . The wonder is that so small a body of public servants has been able to achieve so much." The report for the year ending March 31st, 1928, now before us, shows that both the complaint and the comment are as applicable to-day. Indeed, as the Veterinary Adviser, Captain S. G. M. Hickey, M.R.C.V.S., I.V.S., indicates in his "General Remarks," the need for more adequate establishment has become more pressing. "The work of the department shows a steady increase in all its branches, notably preventive inoculation against contagious diseases, which shows an increase of over 60,000 as against last year's figures. But I am afraid that unless Government greatly increase our present inadequate staff at a very early date little or no further progress can be expected. With our present inadequate staff, it is impossible quickly to suppress contagious diseases or keep them controlled within certain areas; also, Government granting insufficient funds for sera, we are confronted with a period each year when our grant runs out and have to approach Government for additional funds. During this period no inoculation can be carried out for want of sera and in outbreaks visited by the veterinary assistant surgeons nothing can be done excepting explaining to villagers the benefit of isolation which, in the great majority of cases, is not carried out by them, with the result that the disease spreads."

Surely, also, much significance attaches to the following laconic paragraph: "The Mobile Squad sanctioned by the Government in last year's budget could not be got together, no veterinary assistant surgeons being available to fill the posts because other provinces were also increasing their veterinary staff and offering better rates of pay, etc."

We shrewdly suspect complaints as to inadequacy of staff to have been a regular feature of many more reports from the United Provinces than those which date from 1925, yet it would appear that their cumulative effect may fairly be represented by the meagre increase in the establishment since recorded, viz.: the addition of one member to the staff of veterinary inspectors (18) and of 10 to the 176 assistant veterinary inspectors.

An increase is reported in the number of deaths from contagious diseases, the total mortality being 41,192 as against 30,789 in the previous year. Rinderpest, unfortunately, has been responsible for 30,742 deaths, although it is believed that the number would have been appreciably less if the supply of serum had not been suspended temporarily for want of funds. "The large number of deaths may, at first the sight, look depressing," says Capt. Hickey; "but the fact is that ignorant and superstitious villagers are gradually shaking off their false dread of Western scientific methods of animal treatment, and are now coming out to supply correct information, which they were in the habit of suppressing in the past." There was a reduction in the death-rate from blackquarter and anthrax as compared with the last year. It is pleasing to note that the death-rate among horses and ponies was comparatively low.

As regards preventive inoculation, the year was specially marked for the high figure of 222,655 inoculations against rinderpest, hæmorrhagic septicæmia, blackquarter and anthrax, as compared with 160,765 in the previous year. The number could have been higher still if the work had not been temporarily suspended during a part of the year for non-supply of serum owing to want of sufficient funds for which additional provision had to be sought from the Government on application. "The gradual rise in the number of inoculations tends to show that the popularity of the veterinary operations is firmly gaining ground in the minds of the cattle-owning public who, on occasions, have now shown eagerness for inoculation, but formerly they were the people extremely averse to this method and tried their best to hide cattle whenever they had a chance of meeting a veterinary assistant surgeon passing through their village making enquiries about cattle diseases."

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Our readers will endorse most heartily Captain Hickey's comment on this fact—"This is no small achievement for this understaffed department, and as years roll on it is expected that the antipathy ever borne against the activities of this department will, with an adequately increased staff, be completely washed away in no long future, and good feeling will prevail instead."

The Annual Report of the Veterinary Department, Northern Provinces, Nigeria, 1927.

The above Report, published by the Crown Agents for the Colonies, 4 Millbank, London, S.W.1., is now available for purchase, price seven shillings and sixpence. The report is divided into three parts, the first dealing with special diseases of cattle, sheep, goats, equines and dogs, the second relating to the Stock Farm and Cattle Reserve, and the third being the work conducted at the Veterinary Laboratory. Generally speaking, it is evidence of service well carried out, of good progress made under great difficulties, and it seems remarkable that so small a staff, totally inadequate for the proper control of disease, can accomplish so much. The total of livestock for the Colony in 1927 numbered 181,610 stallions and mares, 2,996,679 cattle, 1,827,446 sheep, 4,322,574 goats, 499,997 donkeys, 2,602 camels, 65,128 swine, 26 ostriches and 9 mules, scattered over eleven Provinces. To meet this a Veterinary Staff consisting of the following is maintained:—a Chief Veterinary Officer, 8 Veterinary Officers (less than one per Province), 8 Stockmen, 3 Veterinary Pathologists and Research Officers, 2 Laboratory Assistants, 3 outdoor Laboratory Assistants, a yard Foreman, and clerical staff of 3 for Headquarters and 2 for the Laboratory. As inoculations for the prevention of disease enter largely into the work of the staff, the training of native inoculators has been undertaken, partly at the laboratory, but mostly at immunisation camps. The training of a few Veterinary Mallams has also been carried out.

Special Diseases.

Rinderpest.—As showing the appalling wastage in cattle which occurs annually from epidemics of rinderpest, the following mortality is quoted from four of the Provinces in 1927:—Sokoto, 42,480; Zaria, 23,352; Adamawa, 20,497; Bauchi, 8,295. In all the Provinces there was a decrease of 186,276 cattle from the previous year. In one Province (Plateau) where the immunisation of nearly all the resident herds had been completed in 1926, there was an increase of 26,994 cattle in 1927. The saving which will result when the disease has been effectually brought under control in the various provinces will, therefore, be realised. Immunisation is by the simultaneous method of serum and virulent blood, and carried out in immunisation camps of which there were six in operation. Other camps are to be established, the arrangement being that there will be one in each of the principal cattle-raising provinces. Fulani cattle owners approve of the active immunisation; but would prefer to have their cattle treated at their own villages. The double inoculation was commenced in 1925 and since then approximately 90,000 head have been actively immunised with an average resultant mortality of just under 3 per cent. Each immunisation camp is staffed by a veterinary unit consisting of a Veterinary Officer, at least one Stockman, and a number of native inoculators to assist. Anti-rinderpest serum is obtained from the Veterinary Laboratory and the virulent blood locally by selecting and inoculating the required number of young bulls—usually two—with 5 c.c.'s of rinderpest blood and using the blood of the inoculated one week after if a thermal reaction of 103.5° to 105° is shewn. To eliminate the danger of transmitting trypanosomiasis, the blood is citrated, and tartaric emetic solution in the strength of 1 in 20,000 is added. The dose of serum is 10 c.c.'s for every 100 lb. body weight, with an extra 5-10 c.c.'s for young stock 12 to 18 months over and above the actual body weight required. The dosage of tartarised blood is 2 c.c.'s. A second dose of the tartarised virulent blood is given seven days after the double inoculation. To control the movements of cattle to the immunisation camp and to prevent accumulation, a cattle-movement permit system has been inaugurated. In common with workers in other countries endeavours have been made in the field to find a method of immunisation which would dispense with the necessity of the use of the costly anti-rinderpest serum, and lead to a one-injection method. Formalised virulent blood alone, and formalised spleen pulp have been experimented with and encouraging results obtained. The practicability and efficacy of this method will be determined during the current year.

Amongst the inoculated cattle at the immunisation camps three diseases were noticed:—(a) *Bacillus necrosis* affecting the feet, chiefly seen in young stock 6—12 months old, and met with in the wet season when cattle pens are foul from wet mud and manure; (b) "*Ear Sickness*," so-called from cerebral symptoms, the animal turning round in circles with head lowered to one side, stated to be probably due to a vegetable poison (plant poisoning); (c) *Dawda*, which would appear to be a red water breakdown after rinderpest inoculation; only yearlings and calves were affected.

Contagious bovine pleuro-pneumonia. Has occasioned considerable mortality, but it has not been possible to institute any active campaign against the disease.

Trypanosomiasis. "There is no doubt that this disease is responsible for a mortality only second in severity to rinderpest, but that, owing to its insidiousness and chronic nature its ravages are not so apparent." Only in comparatively few cases has it been possible to investigate outbreaks reported in provinces, and to verify diagnosis by microscopical examination. *T. vivax* is the trypanosome which has been most frequently encountered in cattle in the country. Tryparsamide is reported as having some effect in protecting animals against trypanosome infection when passing through tsetse fly belts. Mechanical transmission (*i.e.*, by flies other than tsetse) is believed to play an important rôle in the spread of trypanosomiasis in the country, and control is centred almost entirely in the eradication of tsetse flies. It is "of interest to record that in certain areas where cattle cannot be kept owing to the prevalence of tsetse flies (*G. morsitans*), sheep and goats are to be found in large flocks apparently in perfect health."

Hæmorrhagic septicæmia, usually sporadic and almost invariably fatal: it is totally confined to the wet season.

Foot-and-mouth disease. No outbreak has been recorded during the year.

Streptothricosis in cattle. More commonly observed than ormerly and responds to arsenical dipping.

Anthrax. It has not been possible to verify the definite existence of the disease in the country.

Redwater is enzootic, but is rarely the cause of serious mortality. It is doubtful if *anaplasmosis* occurs in enzootic form.

Epizootic lymphangitis in horses is fairly common and it is stated that affected animals sometimes recover spontaneously.

Diseases of sheep and goats. Serious economic loss to the export skin trade is occasioned by *demodectic mange* and *streptothricosis* in goats. A study of the nodules in the skin would appear to give credence to the suggestion that the infection of demodectic mange is contracted through the agency of external parasites such as lice. Lesions are shown up on the skins, under the English process of tanning, as distinct ulcer-like depressions. The lesions of streptothricosis appear as small millet-sized warty excrescences, especially along the back. Regular dipping is indicated in both diseases. As shewing the volume of the skin trade it is recorded in Customs Returns that 3,268,248 lbs. weight of tanned and untanned skins were exported in 1926.

Contagious pleuro-pneumonia of goats is widely distributed and of common occurrence in the goat raising provinces: it may occasion as much as 100 per cent. mortality. A chronic form also exists. Sheep are said not to contract the disease. Goat pox (variola) is of more frequent occurrence than was formerly supposed. *Hæmonchiasis* in both sheep and goats is very frequent: dosing with a solution of copper sulphate and arsenite of soda, given hypodermically, and repeated every month, is recommended.

Of diseases in dogs, rabies has been the cause of several Europeans being sent to England for anti-rabic treatment; distemper is almost endemic in some districts; tick fever affects imported dogs severely, and imported dogs also suffer from a very severe form of pneumonia, the actual cause of which is still obscure.

Stock Farm and Vom Cattle Reserve.

The work conducted at the Stock Farm is the breeding of young cattle for Laboratory use in the manufacture of anti-rinderpest serum, and for breeding experiments in connection with stock improvement. The report contains photographs which show the quality of the stock raised: Two native herds are maintained, *viz.*, the White Fulani and the Adamawa. Grade stock is half-bred red-poll native. A small flock of woolled sheep from Daura is also maintained and after a few years of selective breeding it is proposed to introduce pure bred merino or other suitable breeds for mating.

Veterinary Laboratory.

The want of professional research workers is keenly felt, and a good deal of investigation has to be put aside for that reason. The staff was short of one officer on establishment during the year. 574 specimens from the field were examined, 443 *post-mortem* examinations were conducted, and 5,959,500 c.c.'s of anti-rinderpest serum were produced in the year. To meet the increasing demand for the latter, a new wing is being added to the laboratory. With regard to research, the Veterinary Pathologist remarks:—"As our experience of the country and its animal diseases grows, the more and more apparent does the necessity for veterinary research become. During the year many occasions arose for the study of new complaints, and it was unfortunate that it was not possible to avail of them. For instance, diseases in goats alone gave opportunities for investigation which would arouse the envy of many a laboratory worker, but we were without such workers, and had to be content with a mere survey of these diseases.'

Attempts were made at "vaccination" against rinderpest with formalised spleen pulp, and the summary of results is quoted as follows:—"Rinderpest spleen when subjected to contact with formalin for four days, and then inoculated subcutaneously at a dose of 10 grammes per 100 kilos, will protect susceptible cattle from an inoculation of virulent blood sixteen days later. Experiments will continue, to determine any factors which may help to enable a smaller dose of spleen to be equally effective, the present large dose being almost impracticable for a large scale of inoculations."

Following on the experience of last year, *Trypanosoma vivax* infection in bovines was treated with a 5 per cent. solution of potassium antimony tartrate in 10 c.c. doses of the solution per 100 kilogrammes body weight, 10 injections intra-jugularly at five days interval. Results appeared on the whole encouraging.

Though hæmorrhagic septicæmia is not regarded as a serious disease in Nigeria, experiments in sero-vaccination were conducted, the tail being selected as the site of inoculation instead of the shoulder.

Work in connection with diseases of goats is being reserved for a subsequent report, particularly in relation to skin diseases, and contagious pleuro-pneumonia.

J. M.

Premium Bulls.

Clare Committee and Tuberculin Test.

At a meeting of the County Clare Committee of Agriculture Mr. T. Reidy proposed that in future no premiums be given in respect of any bull that had not successfully passed the tuberculin test. It was, he said, a very important matter in the interest of stock breeding. He knew of a man who had paid £50 for a bull that had not been put through the test, and now the bull had gone wrong.

The Secretary said that if the condition proposed by Mr. Reidy was put in their scheme scarcely any premiums would be left. One way out of the difficulty would be to notify applicants selected for premiums that they should not buy any bulls unless the bulls had passed the test.

Mr. Healy, agricultural instructor, said that not half the bulls exhibited at shows had been subjected to the test.

Mr. Crowe said that cattle breeding was not affected very much in Clare by premium bulls, because the premiums granted were few in number.

In view of the fact that premium bulls already had been purchased, Mr. Falvey suggested that no change be made at present, and his suggestion was adopted.

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DIVISIONAL REPORT.

Southern Counties' Division N.V.M.A.*

MEETING AT SALISBURY.

A meeting of this Society was held at the Goldfish Restaurant, Catherine Street, Salisbury, on Thursday, November 29th. The President (Mr. J. B. Tutt, of Winchester) presided and the others who signed the attendance book were Miss Cust and Messrs. E. Whitley Baker, J. Fox, W. F. Maynard, H. C. Rockett, J. H. Ripley, C. Pack, and John Facer (Honorary Secretary).

Apologies for and expressions of regret at inability to attend were announced from Professor Hobday, Captain H. Edie, Messrs. J. W. McIntosh, G. P. Male, S. H. Slocock, Lieut.-Col. P. J. Simpson, Mr. G. C. Saunders, Major J. Stewart Wood, Major E. S. Martin and Mr. Harding.

The minutes of the last meeting were confirmed, subject to the deletion of a certain resolution.

The HON. SECRETARY submitted a circular letter which he had received from the Secretary of the National Veterinary Medical Association, asking that consideration be given to the suggested scheme for providing free treatment for sick animals of the poor. The scheme, the letter stated, had been drawn up as the result of discussions between representatives of the Royal College of Veterinary Surgeons and the Royal Society for the Prevention of Cruelty to Animals, and the Council of the National desired that all veterinary surgeons in any given area should discuss and settle the general principle as to whether such a scheme should be established, and, if so, where and on what conditions.

Mr. WHITLEY BAKER said he would like to propose that they express their willingness to co-operate. He thought it would be to their advantage in the long run if they could co-operate with the R.S.P.C.A. in this matter and work in harmony with them, and he reminded them that there was a somewhat similar arrangement for the human subject in the hospitals of the country. He did not think any of them would like it to go forth that they were not prepared to do what their medical confrères were already doing.

The resolution was put to the meeting and agreed to *nem. con.*

Discussion was next invited on a letter from the National Horse Association of Great Britain calling attention to its activities on behalf of horse owners and users and asking for support as one of its affiliated Societies.

Miss CUST said some of the Association's activities certainly seemed to be deserving of support.

Mr. ROCKETT proposed, and Mr. PACK seconded, that the Southern Counties become affiliated and that they contribute the necessary subscription of £1 1s. to date from January 1st.

Mr. FOX stated that one of the objects the Association has in view is the encouraging of a love of riding in the younger generation.

The PRESIDENT thought they would all be in favour of supporting any body that was out to further any matters affecting the breeding and use of horses. The resolution to become affiliated was carried.

Miss CUST subsequently called attention to the fact that on some of the Association's publicity matter both the Central Veterinary Society and the "National" were classified under the heading of trade societies. If they were going to make a subscription she thought it should be made clear that they regarded themselves as a professional body.

Upon Miss Cust's suggestion, seconded by Mr. RIPLEY, it was decided that this should be pointed out to the Association and that the Hon. Secretary should also call the attention of the National Veterinary Medical Association to the same point.

The Hon. SECRETARY mentioned that he had read in the *Record* of the death of Mr. Charles Herbert Sheather, and on the suggestion of the PRESIDENT, the members rose from their seats as a mark of respect, and Mr. FACER was requested to convey an expression of their sympathy with the relatives.

Mr. FOX suggested that they might draw attention to the necessity for a more strict enforcement of the Milk and Dairies Order of 1926 in regard to testing milk for tuberculosis. The inspectors under the Foods and Drugs Act took samples for testing for deficiency in cream or adulteration, but he regarded the possibility of tubercle bacilli being present as far more serious a matter. At present the Regulations with regard to this seemed to be more or less a dead letter in many parts of the country. It had occurred to him that if they could get some one to read a paper on Milk Supply at one of their meetings it would do a great deal of good, and they might also ask the "National" to take some action with a view to bringing the matter to the notice of the Ministry of Health.

Mr. MAYNARD mentioned that in his own town of Romsey the County Medical Officer had instructed the Town Clerk to get samples taken from every producer in the district, and he, as the veterinary inspector, had since done so.

Mr. FOX remarked that that was the right procedure, but the difficulty was that it was hardly ever carried out. The Order said that cows might be inspected periodically by the veterinary inspector, but for some reason or other it was very seldom that anything was done.

Mr. MAYNARD said the question had occurred to him, who was going to pay for taking the samples?

Mr. FOX: "You will send in your account in the usual way and it will be passed on to the County Medical Officer of Health, who will certify it for payment."

On the proposition of Mr. WHITLEY BAKER, seconded by Mr. MAYNARD, it was resolved: "That the National Veterinary Medical Association be asked to write to the Ministry of Health urging the desirability of a more frequent enforcement of the Regulations made under the Milk and Dairies Order for the periodical inspection of cows and examination of milk for tuberculosis, as there is reason to believe that in certain districts no action whatever is being taken in this direction."

Mr. WHITLEY BAKER wished to propose that they make a subscription of £2 2s. to the Victoria Benevolent Fund and, if they were agreeable, he would also like to suggest that they send a donation of £5 5s. to the Royal

* Received on 21st December, 1928.

Veterinary College Building Fund. He might mention that the Society had just over £40 in hand, so that they could very well afford to make both these contributions.

Mr. RIPLEY stated that if Mr. Baker would divide his proposition into two, he would gladly second the sending of £2 2s. to the Victoria Benevolent Fund, and he would even go so far as to make it £5 5s. this time.

Mr. WHITLEY BAKER remarked that it had hurt him more than he cared to say when he saw the trivial amount they as a profession were subscribing to such a Fund, and he thought they ought to do all they possibly could for it.

Mr. RIPLEY: "If you will drop your original proposal, Mr. Baker, and make it a contribution of £5 5s. I will gladly second it."

Mr. WHITLEY BAKER: "I am only too willing to do that, so long as it is not regarded as a precedent, and I make this condition solely because we do not know how we may stand for funds another year."

Miss CUST suggested that they might send a subscription of £2 2s. and make the other £3 3s. a donation, and this course was unanimously agreed to.

On the question of making a contribution to the College Building Fund, Mr. WHITLEY BAKER candidly admitted that he had been disappointed that a list was not published more frequently of those who were subscribing. For instance, he had heard that an offer had been made to give £10 conditional on nine others making a similar contribution, but he was unaware that the challenge had ever been published.

Mr. FOX remarked that there was also a feeling on the part of many that it would have been better to have disposed of the present site and built elsewhere, where land was cheaper.

One or two others also commented on the lack of information given the profession respecting the progress of the scheme, and in the further course of the discussion Mr. JOHN FACER suggested that they might defer the consideration of making any contribution until a decision had been come to on the point mentioned by Mr. FOX.

Mr. WHITLEY BAKER intimated that he was quite willing to withdraw his own proposition in favour of such a course, and this was agreed.

Two or three *post-mortem* specimens and cases of interest were brought to the notice of the meeting by Miss Cust, Mr. C. Pack and Captain Rockett.

Those present afterwards partook of tea, being the guests of Messrs. Harding and Rockett, to whom a vote of thanks was passed for their hospitality.

The HON. SECRETARY produced for inspection the tooth instruments belonging to the Society.

JOHN FACER, *Hon. Secretary.*

PERSONAL.

Marriage:—WRIGHT—JACKSON. The marriage took place at St. Martin's-in-the-Fields, London, on January 10th, of Mr. Jack Wright, elder son of the late T. E. Tattersall Wright and Mrs. Wright, of Leeds, and Miss Lucy Jackson, eldest daughter of Mr. J. J. R. Jackson, Chief Veterinary Officer, Ministry of Agriculture, and Mrs. Jackson, of Croxley Green, Hertfordshire.

Appointment.—Lurgan Rural District Council have reappointed Mr. Charles G. Thompson, M.R.C.V.S., as veterinary inspector to the Council for a further period of five years, subject to the sanction of the Ministry.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Jan. 21st—Meeting of the Editorial Committee, N.V.M.A., 10 Gray's Inn Square, W.C.

Jan. 25th—Royal Veterinary College Annual Dance, Hotel Russell, London.

Jan. 25th—Annual General Meeting and Dinner of the Royal Counties Division N.V.M.A., at Reading.

Feb. 7th—Meeting of the Section of Tropical Diseases and Parasitology, of the Royal Society of Medicine, 1 Wimpole Street, W. (*Vide* Notice.)

Feb. 8th—Business Meeting and Annual Dinner of the Midland Counties' Division, N.V.M.A., at the Grand Hotel, Birmingham.

A Memorable Meeting.—We shall shortly be publishing a full account of the recently-held meeting of the Central Division, N.V.M.A., which proved to be an occasion of outstanding interest. The Library at the Royal College was crowded with Fellows eager to hear and discuss the results of Captain Comerford's two years' field experience with the preventative treatment of distemper as advocated by Dr. Laidlaw and Major Dunkin, which yielded remarkable evidence of the value of the new method of immunisation. The presence of the authors of the research lent piquancy to the discussion, in which they took part, and the meeting was made the more memorable by contributions from three visitors of such distinction as Dr. L. de Blieck, Dr. Adolph Eichhorn and Sir Arnold Theiler.

TRAINED BIOLOGISTS.

EMPIRE DEMAND FOR SUITABLE CANDIDATES.

"There is a large and growing demand throughout the British Empire for men trained in the biological sciences. This demand the universities have not hitherto succeeded in satisfying."

This is the opening sentence of a leaflet issued by the Ministry of Agriculture and Fisheries, which emphasises the opportunities available for trained biologists throughout the Empire.

The demand, it states, arises principally from the fact that the Governments of the countries of the Empire have awakened, especially since the war, to the services that trained biologists can render in the combating of insect and fungus diseases of crops, in the breeding of improved varieties of crops, in the improvement of the output and quality of meat and dairy produce, in the combating of animal diseases, and in the prevention of losses in storage and transport of agricultural produce.

For the Colonies alone in the last eight and a half years over five hundred biologists have been recruited, in addition to some seven hundred medical officers. Salaries in Great Britain range from £300 to £800 a year, with higher salaries for directors of institutes. In the Colonies they usually range from £500 to £950 or more, amounting in some instances to £1,200—£2,000.

The prospects before the able young biologist promise, the paper states, to be bright for some time to come.

—*The Morning Post.*

XUM

CORRESPONDENCE.

A Warning.

To the Editor of the Veterinary Record.

Sir,—My attention has been drawn to an invitation published in *Our Dogs*, addressed to "Veterinary Surgeons who desire to have their names and addresses inserted in a Directory," to be issued in connection with a book on dogs.

As the publication of a specialist list of veterinary surgeons in this way would be of the nature of an advertisement, I think it well to remind members that the insertion of their names in such a directory might be held by the Council to be a breach of Byelaw 53.—Yours faithfully, Fred Bullock, Secretary.

Royal College of Veterinary Surgeons,
10 Red Lion Square, London, W.C.1.
14*th January*, 1929.

Medical Men Usurping the Function of the Veterinary Profession.

To the Editor of The Veterinary Record.

Sir,—Many of our Continental confrères cannot understand our mentality in allowing medical men to poach on our preserves in questions of veterinary research or other matters concerning our profession. I have been told that in some countries if this were allowed the whole profession would go on strike. We have now a great number of men quite capable of carrying out veterinary research without being controlled by medical men, who know nothing of animals or even of their maladies.

Some medical men even write to the lay press offering to investigate animal diseases. They may go to the length of adding their medical qualifications. If an ordinary veterinary surgeon were to append his to a communication to the press he would render himself liable to be hauled before the Registration Committee. Let the cobbler stick to his last. Where is our Veterinary Trade Union?

Medical men have quite enough to do to look after their own affairs without dabbling in those of others. We have been too long "hewers of wood and drawers of water" for other callings. Let us be masters in our own province.

Sir Edwin Ray Lankester, in one of his series of articles entitled "Science from an Easy Chair," in the *Daily Telegraph*, just before or soon after the commencement of the Great War, stated that the veterinary profession held medical science in the hollow of its hand. This was in response to the criticism of a few of our young men of the nomenclature of animal parasites in the Natural History Museum, South Kensington.—Yours faithfully,

Henry Gray.

Calf Castration by the Burdizzo Method.

To the Editor of The Veterinary Record.

Sir,—In reference to Mr. Henry Taylor's article concerning castration of calves by the Burdizzo method, in to-day's issue of the *Record*, I may say that even though the greatest care be taken during this operation it occasionally happens that at least one testicle retains its functional properties. Such a testicle may grow to an abnormally large size, provided the other is completely atrophied.

It is only recently that I was asked to "recastrate" two "bull-stots," as we term cattle-beasts which retain one functional testicle after the use of the Burdizzo. These two animals were the property of two separate owners and had been purchased *as stots* at different marts. Both showed sexual excitement, although in the case of one the testicle was almost completely atrophied—I used the Burdizzo with complete success in this case. In the other, the testicle was large and was removed with the aid of the knife and emasculator.

Although these animals may be sold, perhaps unwittingly, as castrated animals ("stores") and purchased as such (*caveat emptor* applying in the purchase of store cattle), the purchaser can claim expenses for the recastration, and should a "bull-stot," before being noticed by the purchaser, serve a store, or feeding, heifer, with unfortunate success, compensation can be obtained.—

Yours faithfully, H. M. Wilson, M.R.C.V.S.

134 Bonnygate,
Cupar-Fife.
January 12*th*, 1929.

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To the Editor of The Veterinary Record.

Sir,—I wish to enquire, through your columns, if the Burdizzo method of castration is suitable and safe on bulls that have been got up for show and the owner of which now wishes to have them "steered" to show in the fat stock classes in the future.—Yours truly,

W. D. Blanchard, M.R.C.V.S.

Leominster, Herefordshire.
January 12*th*, 1929.

[Our readers are invited to give their experiences and results in the use of this instrument.—Ed.]

Swine Diseases.

To the Editor of The Veterinary Record.

Sir,—Mr. Masheter's article on "Swine Fever," showing, as it does, a bit of private research, is to be commended. I think it has been too easily assumed that swine plague, contagious pneumonia of swine, pasteurellosis or *schweineseuche*, does not exist in this country. This is *a hæmorrhagic septicæmia*, and is characterised by many of the symptoms that Mr. Masheter enumerates in his interesting account of the three sows.

The real bacteriology of swine plague is a puzzle and has been the subject of investigation, discussion, difference of opinion and debate from 1850 or earlier (Spinola and Wagenfeld), down to the present time.—Yours truly,

Bolton. G. Mayall.

The Royal Veterinary College Rebuilding Fund.

To the Editor of The Veterinary Record.

Sir,—It must be more than six months ago since I received a circular letter from Prof. Hobday asking me if I would do my bit in connection with the National Dog Week movement. I replied saying that I would do what I could, and eventually did so and, in spite of the deplorable conditions of trade in the North, we have raised a considerable sum towards the noble cause.

The fact that I did not graduate at the London College does not appear to me to be a good enough reason to shirk what I regard as a national duty. It is every member's duty to move heaven and earth to do what he can to raise money for the restoration and endowment of the London College. It is at present a reproach to every veterinary surgeon in the Empire to see such a noble institution go to wreck and ruin.

What about our much vaunted "*Vis Unita Fortior*"? Do we live up to it? *No.* If every one of our 3,000 to 4,000 members was to do his duty and raise at least £10 it would look as though he loved his profession.

What a difference from the founders of our profession—what a reflection on the enlightened (?) members of the 20th century.

It is now over four months since Dog Week, yet I have not seen in the *Record* one reference to the funds raised.

I do not say give actually, but raise the money by bridge drives, jumble sales, dances, sports, etc., as we have done in our almost unknown towns in the North. Hoping this letter may arouse *all* our members and their friends from their lethargy.—I am, yours regretfully,

J. P. Isherwood, M.R.C.V.S.

8*th January*, 1929.

The Editor acknowledges the receipt of the following:—

Report of a meeting of the North of England Division, N.V.M.A., from Capt. J. R. Rider, Hon. Secretary.

Communications from Professor J. B. Buxton (Cambridge), Dr. A. L. Sheather (London), and Mr. R. H. Smythe (Camborne).